AQUATIC PLANT
AND
ALGAE CONTROL

ONTARIO MINISTRY OF THE ENVIRONMENT
ONTARIO MINISTRY OF NATURAL RESOURCES

Revised 1989

INDEX

		PAGE
1.0	INTRODUCTION	1
2.0	TYPES OF AQUATIC PLANTS	1
2.1	Algae	1
2.2	Vascular Plants	3
3.0	EURASIAN WATER MILFOIL	3
4.0	CONTROL METHODS	4
4.1	Habitat Manipulation Techniques	5
4.2	Biological Control Methods	5
4.3	Mechanical Control	6
4.4	Chemical Control	6
5.0	LEGAL REQUIREMENTS	7
5.1	Pesticides	7
5.2	Licences	7
5.3	Permit	8
5.4	Ministry of Natural Resources Requirements	9
6.0	HERBICIDE CALCULATIONS	10
7.0	SUGGESTED READINGS	13
8.0	ILLUSTRATIONS	14

Appendix I - List of Regional and District Pesticides Offices of Environment Ontario

Appendix II - List of District Offices of the Ontario Ministry of Natural Resources

1.0 INTRODUCTION

Aquatic plants are a natural part of a healthy aquatic ecosystem. They will grow wherever adequate sunlight and suitable nutrients and water quality conditions exist.

Aquatic plants are beneficial. They augment natural dissolved oxygen levels, bind available nutrients, and provide food and habitat for many aquatic organisms. For example, many fish species use aquatic plants as spawning, nursery and feeding areas and consequently, aquatic plants comprise an important component of fish habitat. Aquatic plants camouflage nesting sites and provide protective cover for waterfowl, fish, amphibians, reptiles and other marsh dwellers. Additionally, their seeds and tubers provide a source of food for waterfowl and other herbivores.

In excessive amounts, however, aquatic vegetation can have a detrimental effect on the ecosystem. Algal "blooms" and dense submerged plant communities can create such large daily fluctuations in the dissolved oxygen levels in the water that fish may die of suffocation. Certain blue-green algal blooms, capable of producing potent toxins, may also pose a health hazard to humans and other animals drinking the water. In addition, excessive aquatic vegetation can spoil the appearance of the water as well as interfere with its intended uses (e.g., swimming, boating, fish rearing, fire protection, crop irrigation, livestock watering, etc.).

2.0 TYPES OF AQUATIC PLANTS

Aquatic plants can be divided into two broad categories: algae, which may be found as single-celled or multi-celled, filamentous species; and vascular plants which generally possess true leaves, stems and root systems.

2.1 Algae

Free-floating, single-celled algae are the simplest plant forms that live in a water environment. Each cell is a

complete plant in itself. In the presence of nutrients (phosphorus and nitrogen) and sunlight, these algae will multiply rapidly, leading to the production of algal "blooms" which can cause the water to appear "pea-soup" green or brownish. Nutrients may be introduced into the water naturally (through the decomposition of leaf litter or large aquatic plants) or artificially (through the leakage of a faulty septic system, the run-off and seepage from farm livestock operations or decomposition of grass clippings).

Filamentous algae are made up of a series of cells joined end to end which give the algae a thread-like appearance. They are also known as "pond scum" because they form greenish mats upon the surface of the water. Early in the spring, filamentous green algae may grow prolifically in ponds, but often die back naturally at the end of the summer.

Cladophora, a branched, filamentous, green alga, is a problem in many beach areas of the Great Lakes, including Lakes Huron, Erie, and Ontario. Plant filaments, growing on rocks underwater, are broken off and washed up in large quantities on the beaches. Decomposition of this debris often causes offensive odour problems.

Chara (muskgrass) and Nitella (stonewort) are also branched, filamentous algae that superficially resemble vascular plants, but do not actually possess true roots, stems or leaves. In these algae, calcium carbonate from the water is incorporated into the cell walls to give rigidity. There is sufficient calcium carbonate to leave a white powder when the plants are removed from the water and dried. Chara is a problem in many hardwater trout ponds where it may grow up to 3-4 m in length, under suitable conditions. These plants are difficult to control with moderate doses of pesticides and dense communities should be removed mechanically. Since each filament fragment can regenerate into a new plant, re-invasion following fragmentation during mechanical removal can also be a problem.

2.2 Vascular Plants

i) Submergents

Several types of pondweeds, Eurasian water milfoil and tape grass are some of the more common submergent aquatic plants found in Ontario. These are rooted plants that grow either completely or mostly below the surface of the water. These plants are generally flaccid and depend upon the water for support. Flowers, if present, may extend above the surface of the water.

ii) Emergents

Some of the common emergent aquatic plants found in Ontario are cattails, bulrushes, pickerelweed, duckweed and water lilies. These plants are characterized by having rooted bases below the surface of the water, with flowers and most of the leaf-stem tissue above the surface of the water.

3.0 EURASIAN WATER MILFOIL

Many of today's problems in environmental management relate directly to the presence of exotic plant imports. These are non-native plants that have been introduced intentionally or accidentally into Canada.

In Canada, the best known aquatic invader is Eurasian water milfoil. This plant, native to Europe and Asia, was found in 1902 in Chesapeake Bay, Maryland, and has since spread throughout North America. Its first recorded presence in Canada was a specimen collected from Rondeau Provincial Park in 1961. The plant was not widely recognized as a nuisance until the early 1970's when it became troublesome in the Kawartha Lakes in Ontario, in Quebec and in British Columbia.

Eurasian water milfoil is an extremely aggressive plant that reproduces largely by fragmentation. It grows rapidly and crowds out the existing native plants. It can invade water from 1 to 10 metres deep. When the stems reach the surface, canopy formation occurs through profuse branching. In temperate climates, the plant exhibits a rapid growth phase in early spring. It reaches the water surface by mid to late June and causes severe interference with recreational water uses. Since it can thrive under a variety of environmental conditions, it has become widespread in most Ontario lakes except in the soft-water Precambrian Shield lakes.

4.0 CONTROL METHODS

With any pest, it is imperative that the problem is properly identified before a control method is selected. If you have any doubts about the identity of your pest plants, you can contact the Pesticides Officer at the nearest District Office of the Ontario Ministry of the Environment (Appendix I).

There is no simple or single answer to aquatic vegetation control. When considering weed control measures for lakes where aquatic plants interfere with recreational use, primary consideration should obviously be given to rectifying the main cause of the problem, for example, by reducing the amount of nutrients entering the water.

A wide range of control measures including habitat manipulation, biological control, mechanical harvesting and chemical control have been practised around the world with variable success. A careful assessment of various techniques and of the value of the presence or absence of aquatic plants in a particular situation, should be made before any attempt at control is undertaken.

Because aquatic plants are an important component of fish habitat, it is necessary to contact the nearest Ministry of Natural Resources District Office before planning any activity to control aquatic vegetation. In fact, it is

against the law to harmfully alter, disrupt or destroy fish habitat. A list of the District Offices of the Ministry of Natural Resources is included in Appendix II.

4.1 Habitat Manipulation Techniques

The objective of habitat manipulation is to alter one or more of the physical or chemical factors critical to plant growth. For example, the use of dyes or sheets of black plastic or other screening material reduces light penetration and thereby reduces plant growth. Covering the lake bottom with 15 to 20 cm of sand (referred to as "filling") may be an effective method of physically altering the substrate. A sheet of dark, heavy-duty, construction polyethylene placed below the sand blanket will have the effect of both curtailing the transport of nutrients from the lake bottom and of preventing the sand from sinking into soft sediments.

Dredging can be used to deepen a body of water, thus reducing the areas which can be colonized by plants. Dredging may also remove nutrient-rich sediments and alter the texture of the substrate, particularly in areas where silting has covered sterile sand or gravel bottoms.

Both dredging and filling operations can destroy valuable fish spawning areas. Therefore, the nearest District Office of the Ministry of Natural Reosurces must be contacted before any substrate alteration activities may be undertaken.

Another habitat manipulation method that has been used with variable success is overwinter "drawdown". This technique consists of lowering the water level of a water body in the fall to expose the plants to freezing and desiccation during the winter.

4.2 Biological Control Methods

Biological control offers an alternative to chemical or mechanical control. It involves the use of a biological

agent (e.g. a natural predator) to control an undesirable pest species. However, these biological agents (fish, pathogens, insects, etc.) are, of necessity, exotic imports and in view of past mistakes, there is a general reluctance to use these techniques on a wide-scale basis.

Currently the use of biological control agents is in its infancy and must be approached with caution to avoid the possibility of introducing new pests or substituting one pest for another.

4.3 Mechanical Control

One of the oldest techniques for the control of aquatic vegetation is mechanical removal. Mechanical removal equipment includes: chains dragged along the bottom to uproot vegetation; small, boat-mounted cutters; and large weed harvesting machines capable of cutting and collecting the plants for shoreline disposal. The use of mechanical methods for clearance of small areas (e.g. swimming beaches) can be effective, although labour intensive. Failure to remove the uprooted plants or cuttings from the water can create oxygen depletion problems through decomposition of the vegetation, and can encourage the spreading and re-rooting of plant fragments.

Large-scale projects require specialized weed harvesting machines. Vast quantities of plant material containing nutrients (e.g., nitrogen and phosphorus) can then be removed from the waterways.

4.4 Chemical Control

Chemical control has been commonly used throughout North America for several decades. The mode of action of herbicides is specific. It is essential, therefore, to identify the nuisance plants, prior to treatment, to ensure that the herbicide selected for use will provide effective control. It is important to remember that a

herbicide treatment results in the release of nutrients into the aquatic environment when the plants decompose, and that these nutrients serve as food for next year's crop and may also cause severe algal "blooms" to occur.

Not all species of aquatic vegetation can be controlled by currently registered herbicides. Muskgrass, tape grass, and the filamentous green alga Cladophora, are three examples of aquatic plants that are resistant to herbicidal activity. When resistant and susceptible plant species are present together and create a joint problem, an integrated pest management (IPM) scheme, incorporating different control methods must be sought, rather than one using pesticides alone.

5.0 LEGAL REQUIREMENTS

5.1 Pesticides

Pesticides must be registered under the federal Pest Control Products (PCP) Act before they are legal for sale and use in Canada.

Pesticides must also be scheduled under the provincial Pesticides Act, before they are legal for sale and use in Ontario.

The pesticide label which carries a registration number under the PCP Act, is a legal document. The pesticide must be used only in the manner specified on the label for the purposes specified on the label. Any other use is illegal. **ALWAYS READ THE LABEL CAREFULLY.**

5.2 Licences

The Pesticides Act, Subsection 5(1), provides that: "no person shall engage in, perform, or offer to perform an extermination except under and in accordance with a licence of a prescribed class...unless exempt under the regulations."

Therefore, a water exterminator's licence (Class 1 or Class 3 endorsed) is required by anyone applying a pesticide to water in Ontario.

However, there is an exemption: A Licence is not required "where a person performs a water extermination within the boundaries of premises owned or occupied by the person or by a person of whom he is a full-time employee" (i.e. on one's own or one's employer's property).

The licensing system ensures that people are educated on the proper storage, handling, and use of pesticides, and their impact on the environment.

5.3 Permit

Subsection 7(2) of the Pesticides Act provides that: "no person shall perform a water extermination unless he is the holder of a permit issued by the Director [under the Act] for the water extermination or he is exempt under the regulations".

Therefore, a Permit to Purchase and/or Perform a Water Extermination must be obtained before any aquatic pesticide can be legally purchased or applied to surface waters (e.g. ponds, lakes, rivers), in Ontario.

Again, there is an exemption: "Agriculturalists" who wish to treat a pond wholly confined within their property and where there is no outflow at any time beyond their property limits are not required legally, to obtain a permit, although it is recommended that they do so.

The permit system ensures that excessive and indiscriminate use of pesticides does not occur: by authorizing the use of a specific pesticide; by limiting the amount of pesticide that may be purchased and used; by setting forth the conditions under which it may be used; and by delineating the treatment area.

All applications for a Permit to Purchase and/or Perform a Water Extermination are reviewed by staff from the Ontario

Ministry of the Environment and the Ontario Ministry of Natural Resources. If valid scientific reasons exist, the Director under the Pesticides Act may deny the permit or impose certain conditions. The permit applicant may appeal by contacting the Director and may request a hearing before the Environmental Appeal Board.

The acquisition of a permit or a licence does not divest any individual or commercial applicator of the responsibility for any undesirable consequences arising from a treatment. Anyone applying any substance without the authority of a licence or permit, or violating any of the terms and conditions of a permit, is guilty of an offence under the Pesticides Act and Regulation and upon summary conviction, is liable to a fine.

ALL OF THE TERMS AND CONDITIONS SET FORTH ON THE PERMIT MUST BE STRICTLY ADHERED TO. Neighbours must be notified and must agree prior to the water extermination. The size of the treatment area, the rate and amount of pesticide authorized for use must not be exceeded. Signs must be posted if required and any other terms or conditions must be complied with, as stipulated on the permit.

A Permit to Purchase and/or Perform a water extermination is valid until December 31 of the year in which it was issued. About six weeks are required for processing a permit, providing that all of the required information is submitted and the application form is filled out correctly.

For information on what is required and how to obtain a Permit to Purchase and/or Perform a Water Extermination read the factsheets:

"Guide to Water Extermination Permits' and "Multiple Property Permit Procedures".

5.4 Ministry of Natural Resources Requirements

Section 35(1) of the federal Fisheries Act, states that: "no person shall carry on any work or undertaking that

results in the harmful alteration, disruption or destruction of fish habitat." Thus, before removing or altering any aquatic vegetation, it is first necessary to contact the local District Office of the Ministry of Natural Resources for assistance in assessing the project's impact on fish habitat.

6.0 HERBICIDE CALCULATIONS

In order to calculate the amount of herbicide required for a treatment, it is essential to calculate, as accurately as possible, the surface area of the body of water to be treated. If the application rate for a herbicide (as given on the label) is stated in "kg/ha" (kilograms per hectare) or "L/ha" (litres per hectare), then the amount of herbicide to be used can be calculated by multiplying the surface area (in hectares) by the product application rate (expressed as kilograms or litres per hectare).

EXAMPLE #1

You want to use Reglone A to control the growth of pondweeds, water milfoil and duckweed in a 50 ft. by 100 ft. (15.25 m x 30.5 m) area of the lake in front of your cottage.

a) Determine the application rate of the product by reading the Reglone A label (see also "Guide to Pesticide Rates").

The product application rate is 22L/ha.

b) Determine the surface area of the water to be treated, in hectares:

Surface area = length x width
= 15.25 m x 30.5 m
= 465 m^2

Since 10,000 m^2 = 1 ha

Therefore 465 m^2 = $\frac{465}{10,000}$
= 0.0465 ha

c) Calculate the amount of Reglone A required:

Amount required

= surface area x application rate
= 0.0465 ha x 22 L/ha
= 1 L

Therefore 1 L of Reglone A would be required to treat an area of 15.25 m (50') x 30.5 m (100').

NOTE: It is essential to use the correct application rate, in order that the correct amount of herbicide is applied.
All calculations should be made using the PRODUCT application rate as recommended on the PRODUCT LABEL.

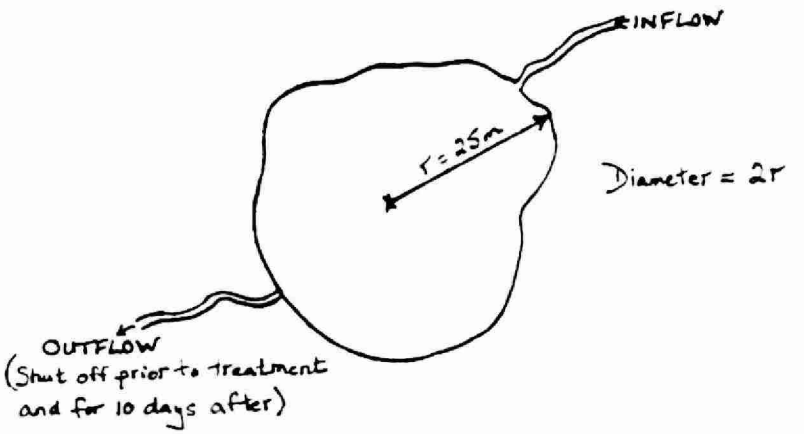
If the application rate for a herbicide is given as an amount of product to use per volume of water, then the volume of water to be treated must be calculated before the amount of herbicide to be used can be determined (see Example 2).

EXAMPLE #2

To treat a roughly circular pond, 50 m in diameter, with Princep Nine-T for the control of filamentous algae, the amount of Princep Nine-T required can be calculated as follows.

a) The surface area of a circle is equal to πr^2, where $\pi = 3.14$ and
r is the radius of the circle (see diagram below).

Therefore, the surface area of the pond is:
= πr^2
= 3.14 x 25 m x 25 m
= 1,962.5 m^2



b) The volume of water to be treated is calculated by multiplying the surface area times the average depth. Therefore, if the average depth of the above pond is 2.0 m, the volume of water is equal to:

surface area x average depth

$1{,}962.5\ m^2 \times 2\ m = 3{,}925\ m^3$

Since $1\ m^3 = 1{,}000\ L$

The volume of water $= 3{,}925\ m^3 \times 1{,}000\ L/m^3$
$= 3{,}925{,}000\ L$

c) Therefore, the amount of Princep Nine-T required is: recommended product rate x volume of water

$5g/10{,}000\ L \times 3{,}925{,}000\ L = 1962.5\ g$
$= 1.9625\ kg$
$= 2\ kg$

Conversions:

1 yard	= 0.91 m
10,000 m^2	= 1 ha
1 m^3	= 1000 L
1 ha	= 2.5 acres
1000 g	= 1 kg
1 ft	= 0.3048 m
50 ft	= 15.25 m
100 ft	= 30.50 m

Legend:

ft	= foot
m	= metre
m^2	= square metres
m^3	= cubic metres
ha	= hectare
g	= gram
kg	= kilogram
L	= litre

SUGGESTED READINGS:

Ontario Ministry of the Environment Publications:

1. Guide to Water Extermination Permits
2. Multiple Property Permit Procedure
3. Alternatives to Chemical Weed Control
4. Aquatic Weed Control in Ponds
5. Aqua-kleen
6. Reglone A
7. Guide to Pesticide Rates

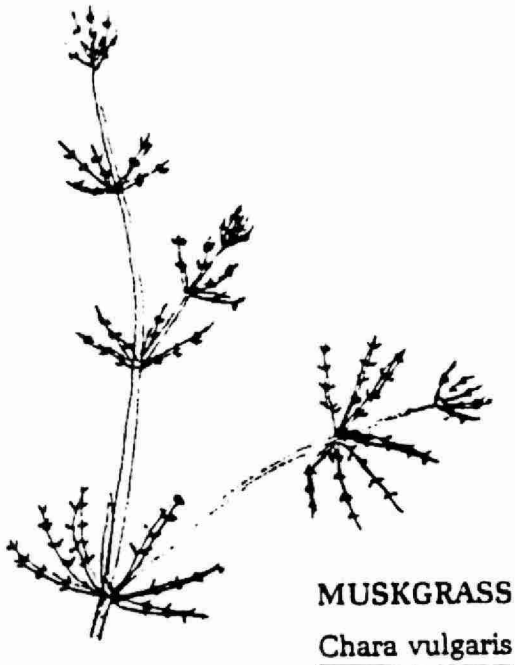
Ontario Ministry of Agriculture and Food Publications:

1. Publication #75, Guide to Weed Control
2. Farm Ponds

Ontario Ministry of Natural Resources Publication:

1. Dredging and Filling, Publication #3069

PLANT-LIKE ALGAE

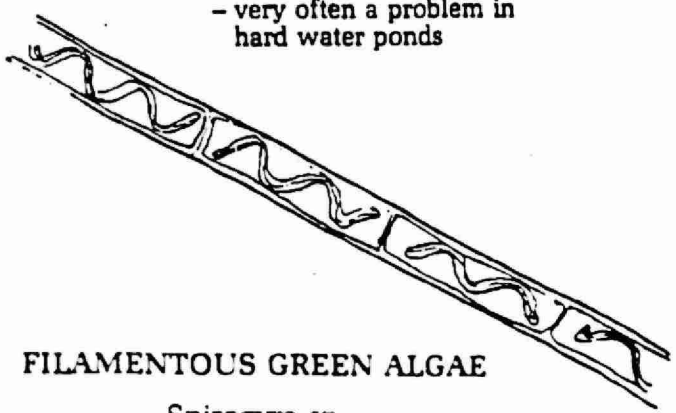


MUSKGRASS

Chara vulgaris

½ - 1 x actual size

- can grow up to 4 metres in length
- lime green - grey green
- rough, coarse, gritty to the touch
- strong musk odour
- dries to white powder when removed from water
- attached to the bottom
- usually less than 0.75 metres high
- orange fruiting bodies may be present
- very often a problem in hard water ponds

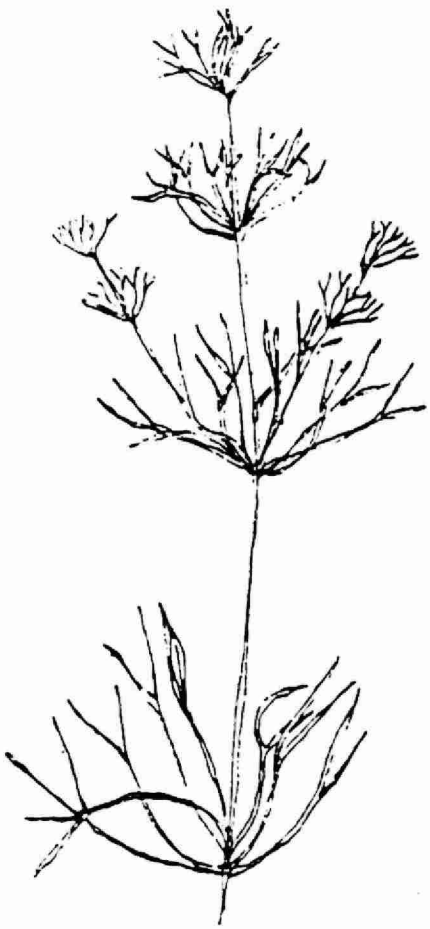


FILAMENTOUS GREEN ALGAE

Spirogyra sp.

125 - 250 x actual size

- green hair-like filaments
- slimy to touch
- often attached to rocks



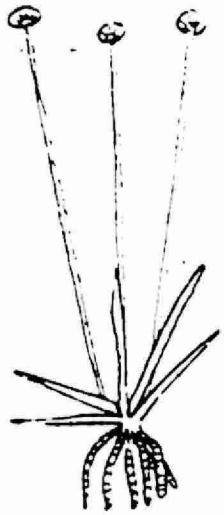
STONEWORT

Nitella sp.

3 x actual size

- much like Chara but smooth to the touch
- does not dry to a white powder when removed from water

SUBMERGED VASCULAR AQUATIC PLANTS

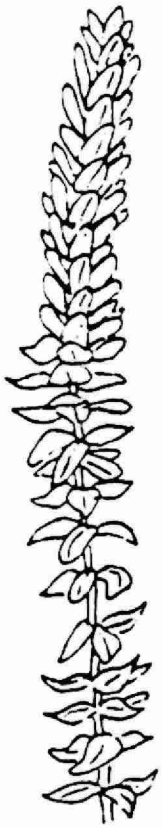


PIPEWORT

Eriocaulon sp.

½ x actual size

- leaf rosette about 8 cm. diameter
- button-like white flowers on straight stalk above surface of water
- fibrous white root



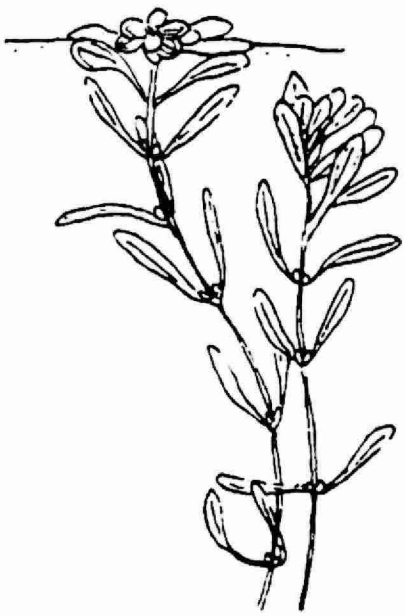
CANADA WATER WEED

Ancharis canadensis

(ELODEA)

actual size

- may or may not be rooted
- entirely submerged except in flower (white or pink)
- stem often branched
- base of leaf embraces stem
- clusters of 4 small leaves around main stem
- leaf margin has microscopic teeth

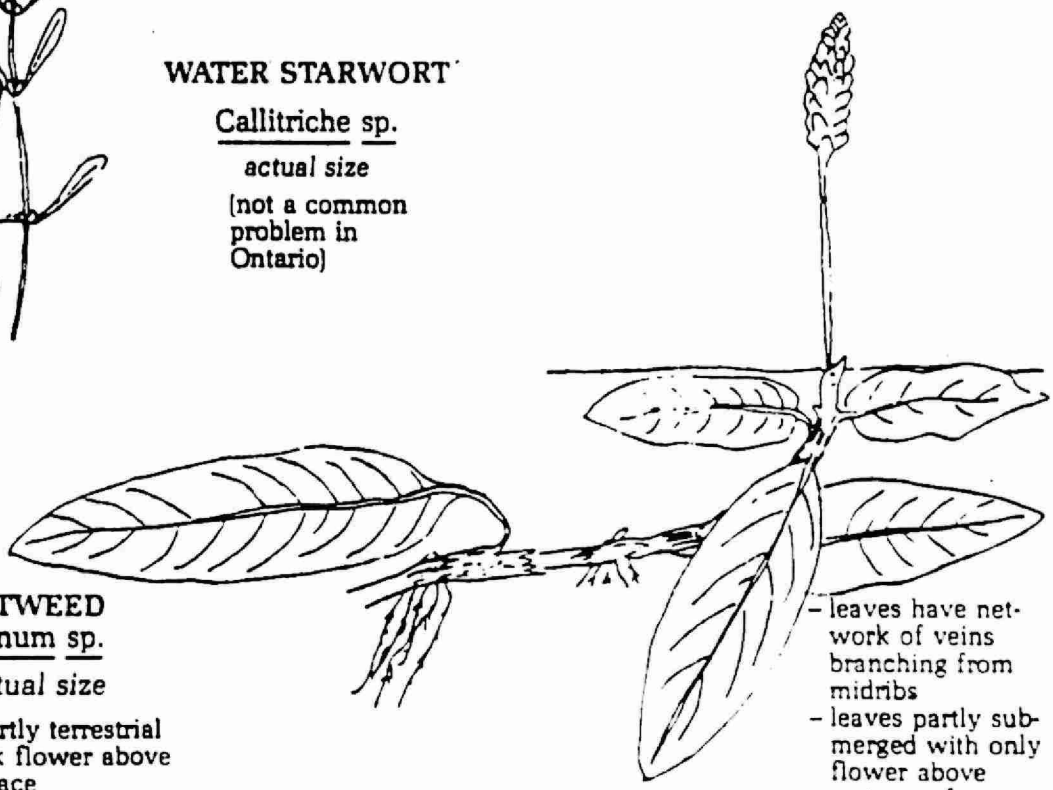


WATER STARWORT

Callitriche sp.

actual size

(not a common problem in Ontario)



SMARTWEED

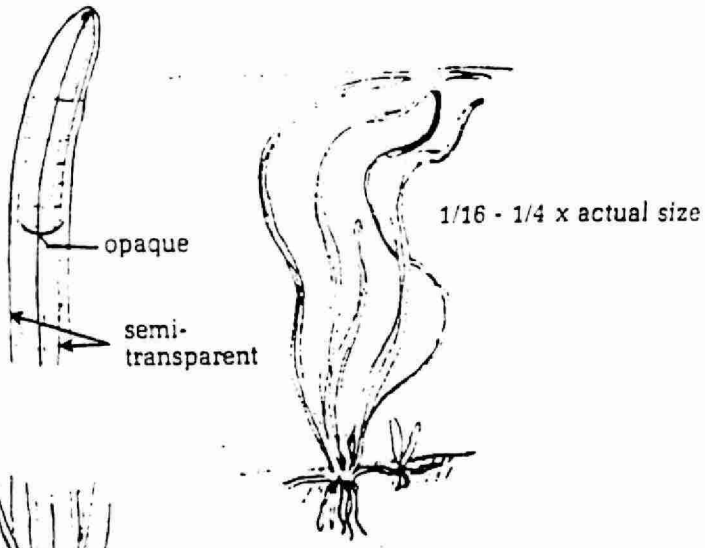
Polygonum sp.

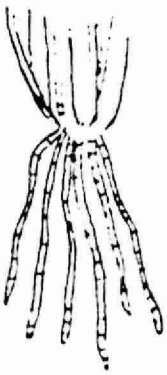
½ x actual size

- may be partly terrestrial
- bright pink flower above water surface

- leaves have network of veins branching from midribs
- leaves partly submerged with only flower above water surface

SUBMERGED VASCULAR AQUATIC PLANTS





actual size

TAPE GRASS (WILD CELERY)

Vallisneria americana

- leaves ribbon-like, up to one metre or more in length
- short flared root
- tiny white flower at surface on coiled stem
- long pod-shaped fruiting body
- new plants grow at nodes along buried stems

WATER MILFOIL

Myriophyllum sp.

actual size

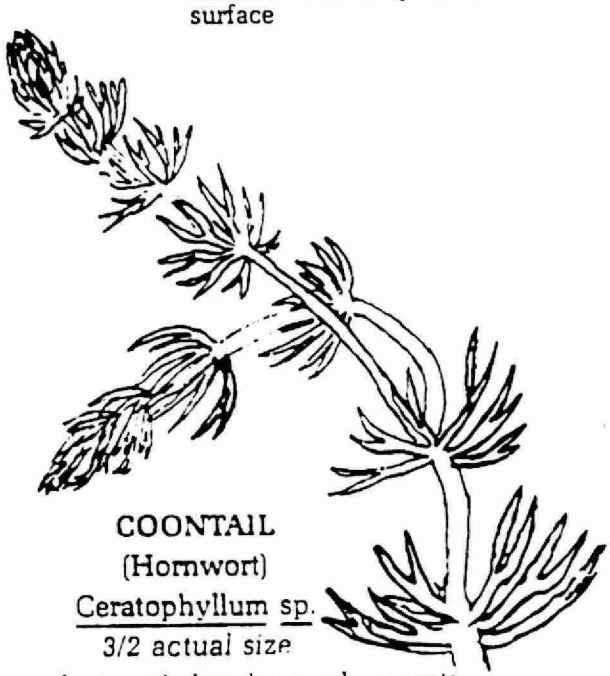
- four feathery leaves at each stem nod
- each leaf symmetrically subdivided
- many stems from 1 root; stems may be branching
- there are a number of native and exotic species
- small flowers in spikes above water surface

BLADDERWORT

Utricularia vulgaris

actual size

- asymmetrical branching
- tiny bladders easily recognizable
- can grow as long as 0.5 metre



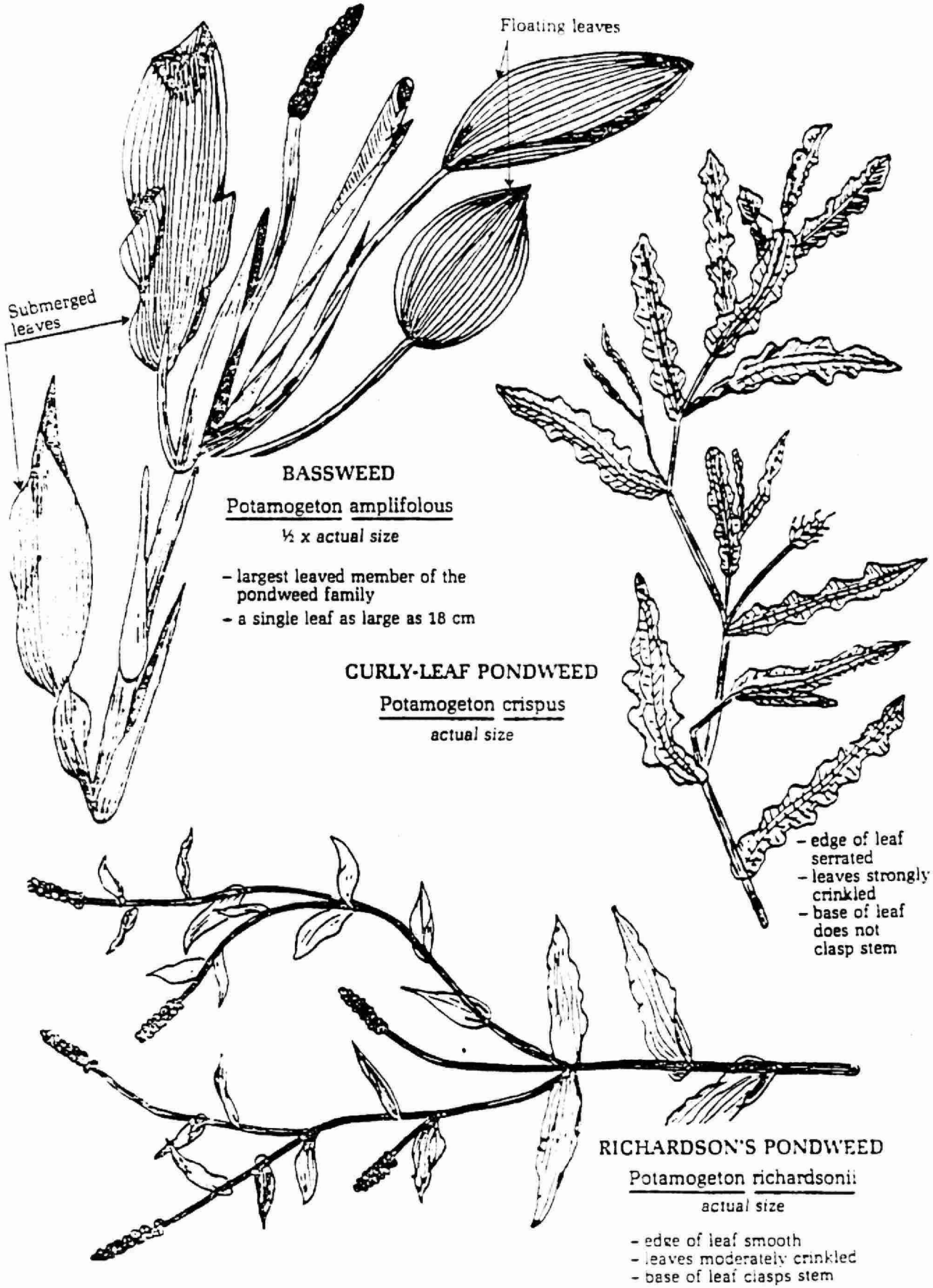
COONTAIL

(Hornwort)

Ceratophyllum sp.

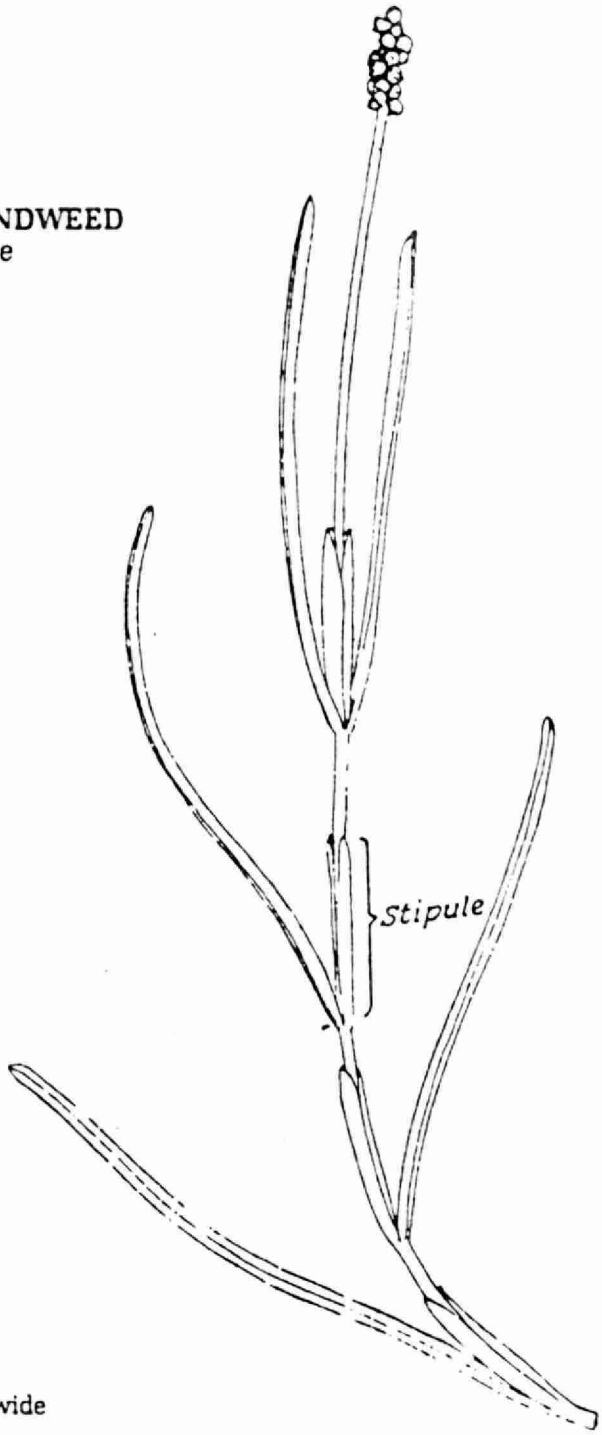
3/2 actual size

- plants entirely submerged, no roots, sometimes stem is embedded in the muddy bottom
- paired leaflets grouped at regular intervals along stem
- stem may be branched
- usually heavy concentrations of leaflets at apex


Floating leaves
Submerged leaves
BASSWEED
Potamogeton amplifolous
½ x actual size
– largest leaved member of the pondweed family
– a single leaf as large as 18 cm
CURLY-LEAF PONDWEED
Potamogeton crispus
actual size
– edge of leaf serrated
– leaves strongly crinkled
– base of leaf does not clasp stem
RICHARDSON'S PONDWEED
Potamogeton richardsonii
actual size
– edge of leaf smooth
– leaves moderately crinkled
– base of leaf clasps stem

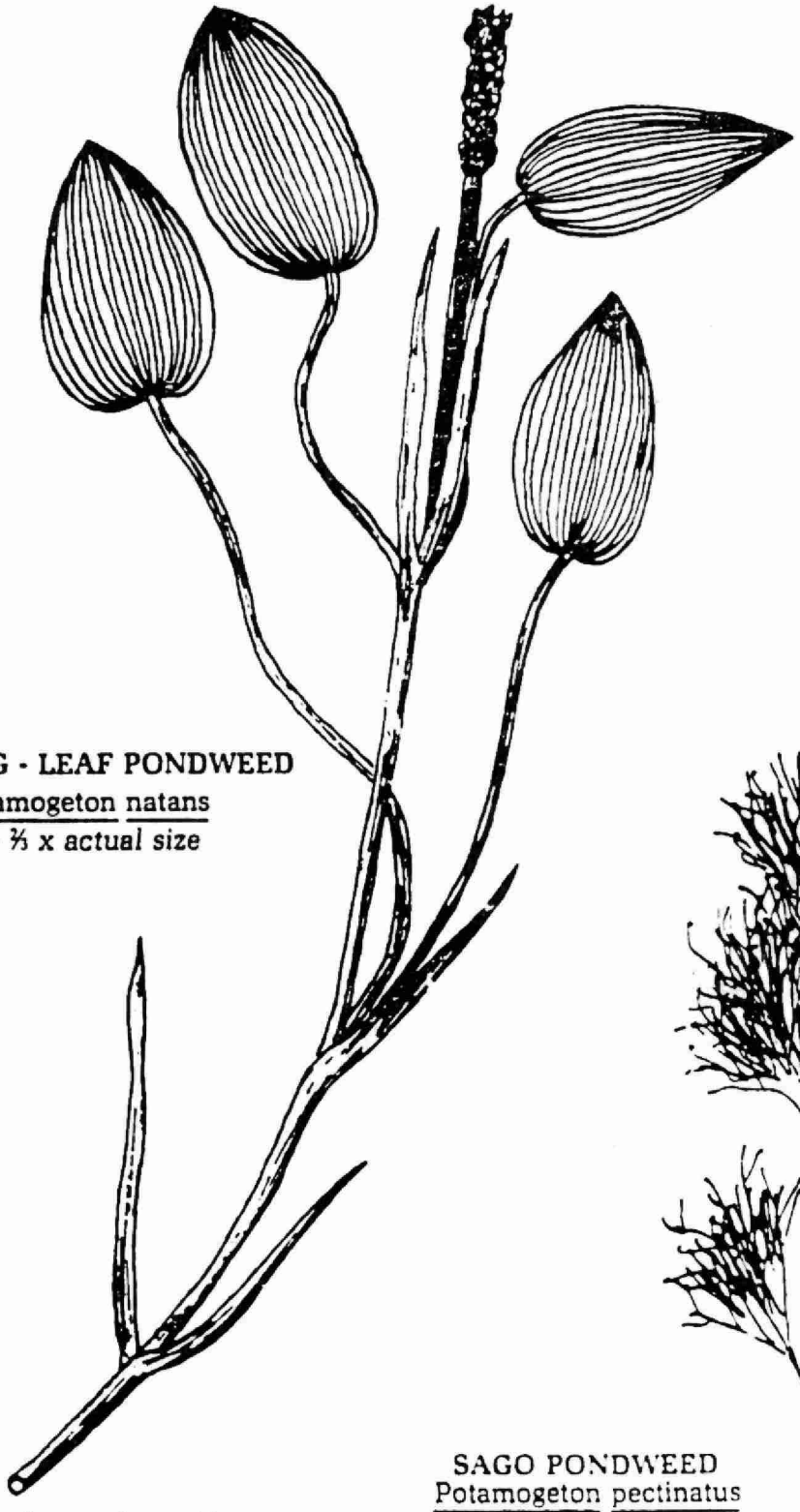
SUBMERGED VASCULAR AQUATIC PLANTS

FLAT-STEMMED PONDWEED
½ x actual size



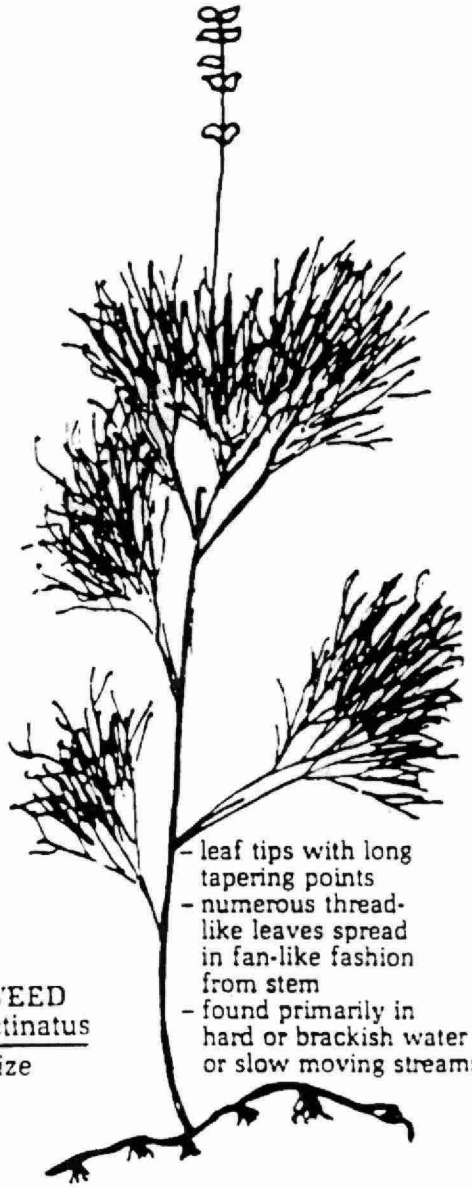
- main leaves ribbon-like and long; 1-3mm wide
- stem many-branched
- stripules delicately reined either green or white

SUBMERGED VASCULAR AQUATIC PLANTS



FLOATING - LEAF PONDWEED
Potamogeton natans
½ - ⅔ x actual size

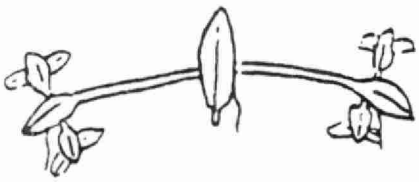
- oval brownish-green leaves float on water surface
- leaves heart-shaped at base
- flower spike usually above water surface



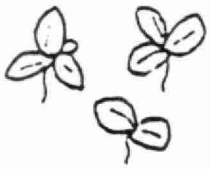
SAGO PONDWEED
Potamogeton pectinatus
½ x actual size

- leaf tips with long tapering points
- numerous thread-like leaves spread in fan-like fashion from stem
- found primarily in hard or brackish water or slow moving streams

EMERGENT AQUATIC PLANTS



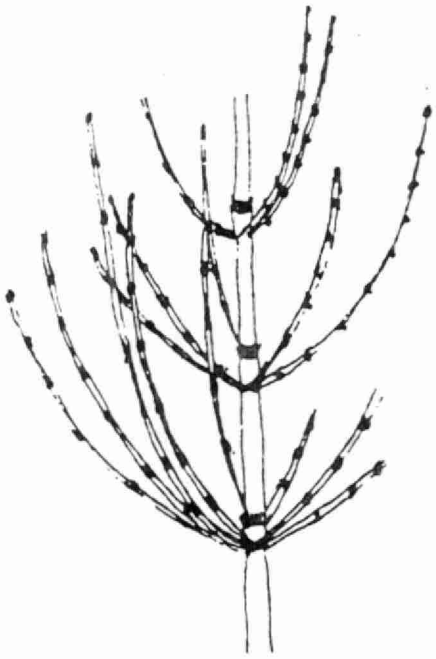
DUCKWEED
Lemna sp.



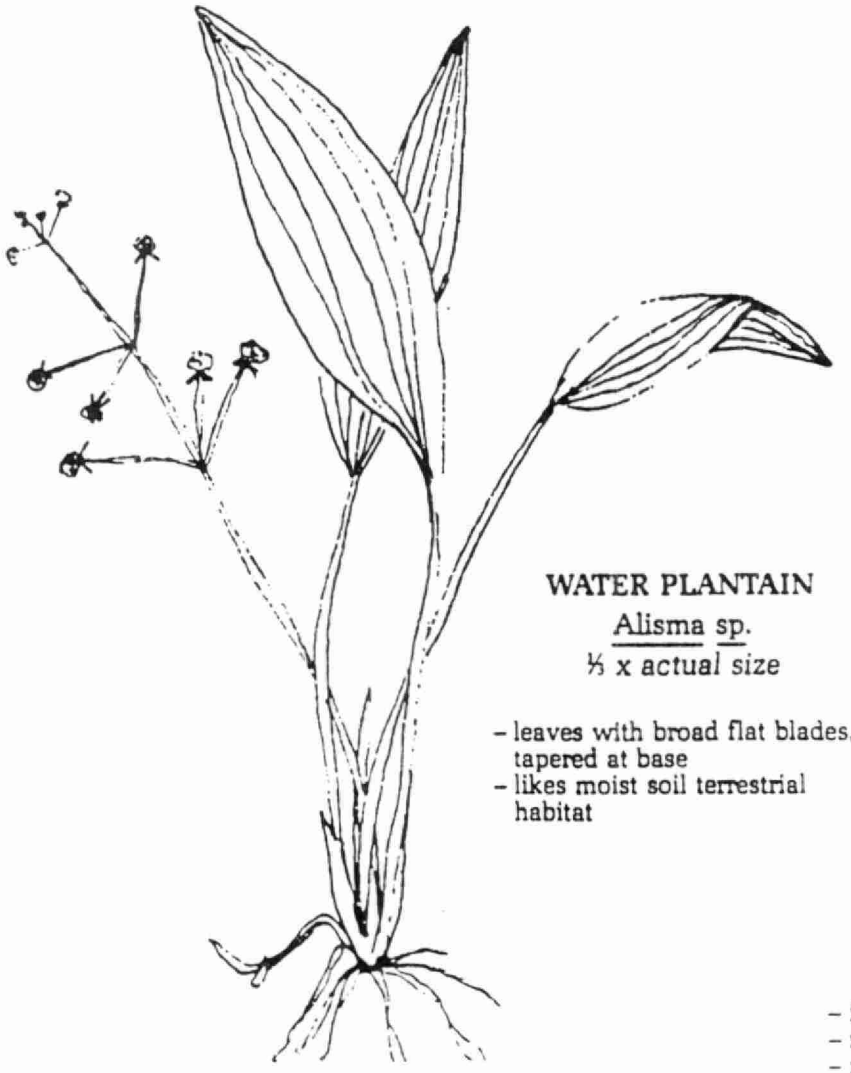
3 - 4 x actual size

- floats at or near surface of water
- hair-like roots may dangle below foliage

HORSETAIL
Equisetum sp.
½ x actual size



- stems hollow and pointed
- no true leaves but a whorl of slender branches from each joint



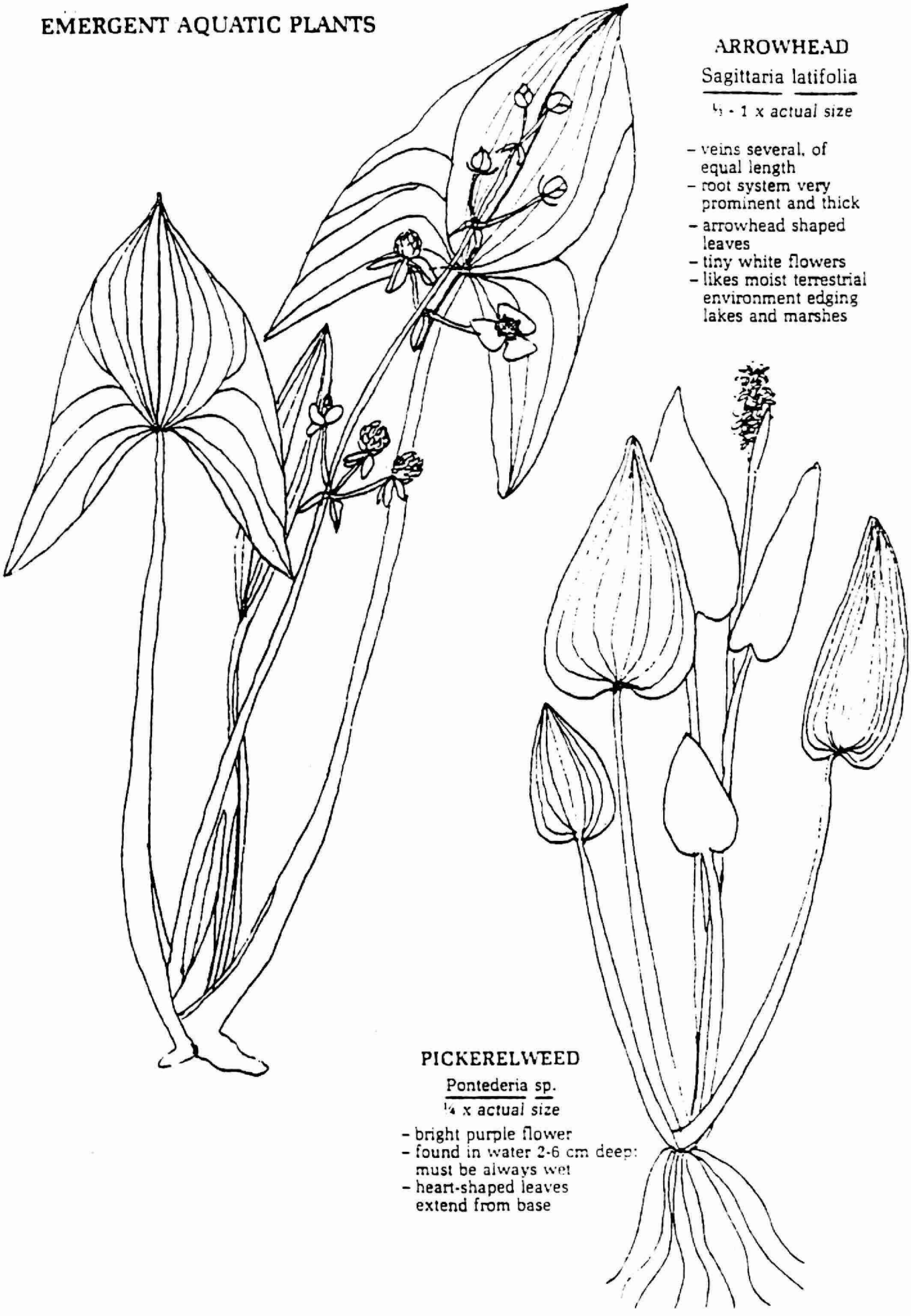
WATER PLANTAIN
Alisma sp.
⅓ x actual size

- leaves with broad flat blades, tapered at base
- likes moist soil terrestrial habitat

WATERMEAL
Wolffia sp.
4 x actual size

- floating on or near surface of water
- no roots
- microscopic meal-like (globular) bodies

EMERGENT AQUATIC PLANTS



ARROWHEAD

Sagittaria latifolia

½ - 1 x actual size

- veins several, of equal length
- root system very prominent and thick
- arrowhead shaped leaves
- tiny white flowers
- likes moist terrestrial environment edging lakes and marshes

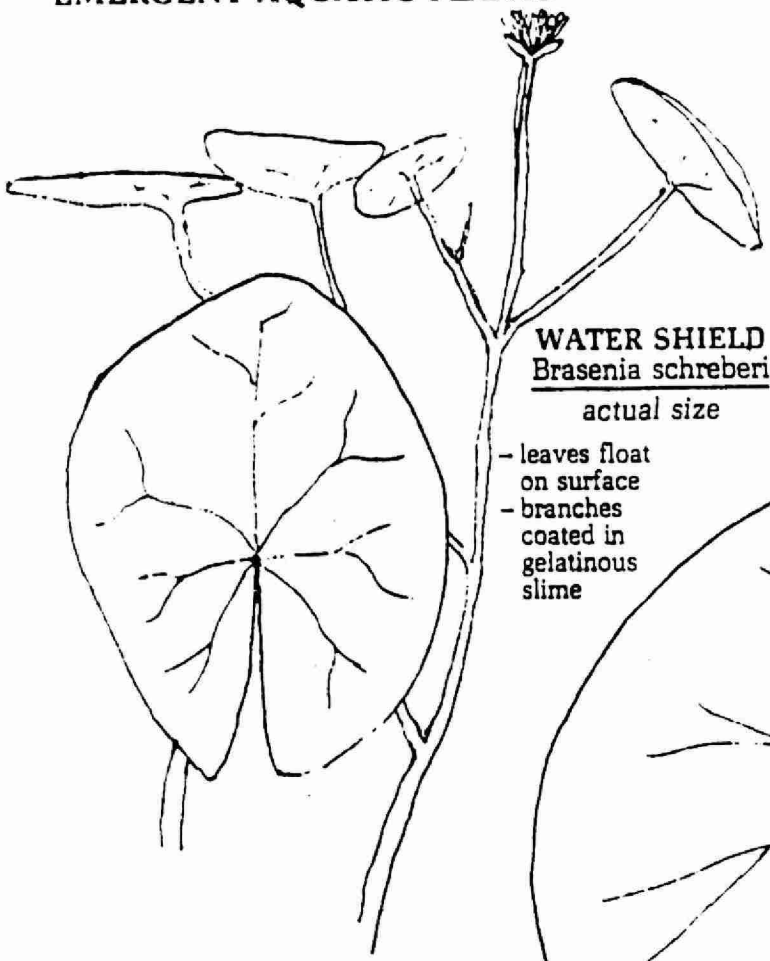
PICKERELWEED

Pontederia sp.

¼ x actual size

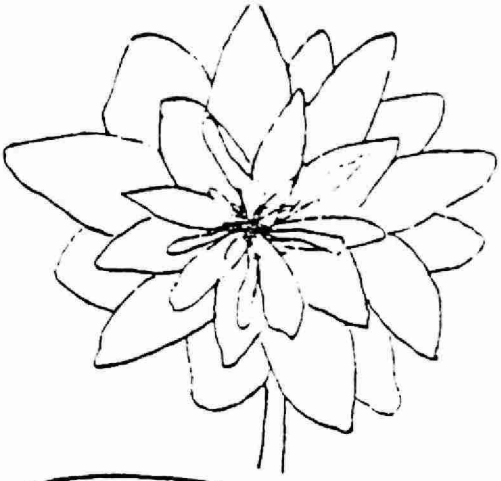
- bright purple flower
- found in water 2-6 cm deep; must be always wet
- heart-shaped leaves extend from base

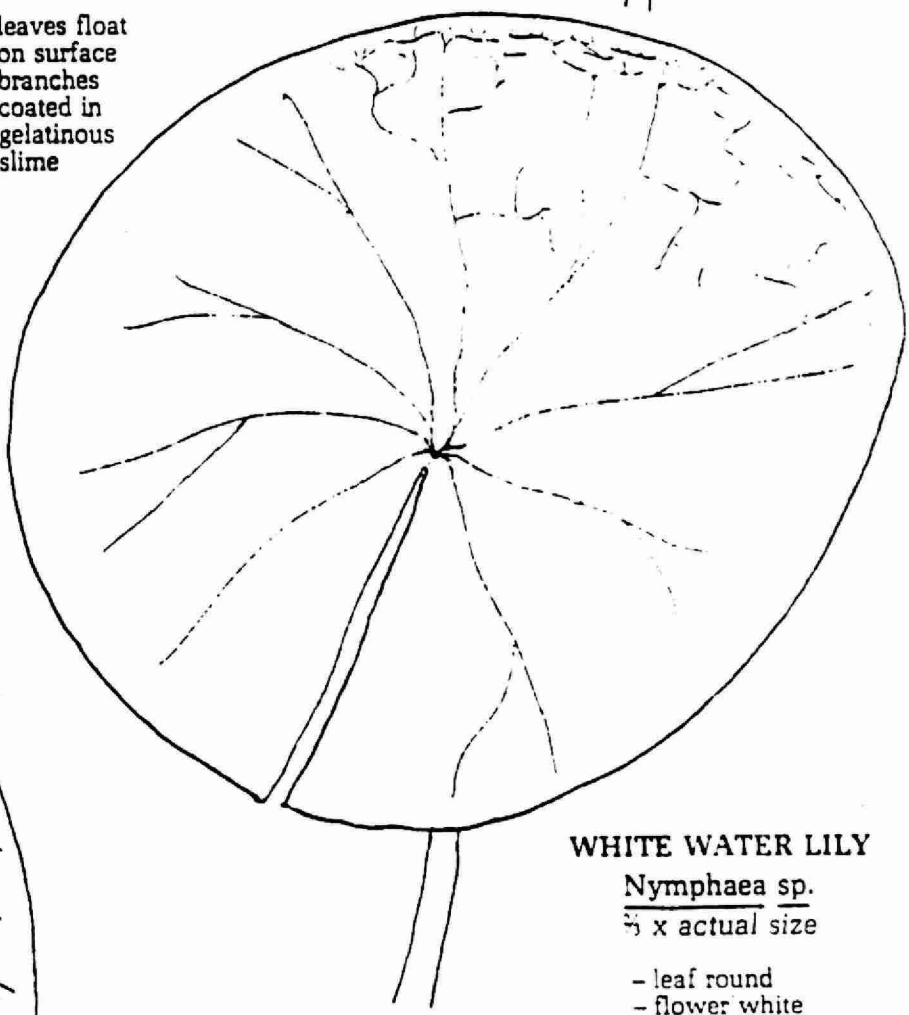
EMERGENT AQUATIC PLANTS



WATER SHIELD
Brasenia schreberi
actual size

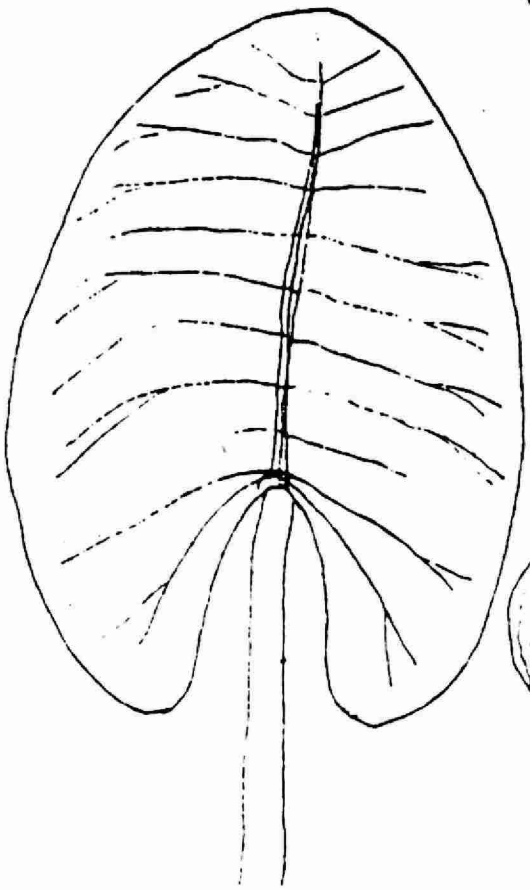
- leaves float on surface
- branches coated in gelatinous slime

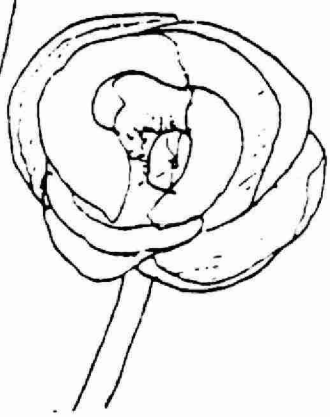




WHITE WATER LILY
Nymphaea sp.
½ x actual size

- leaf round
- flower white

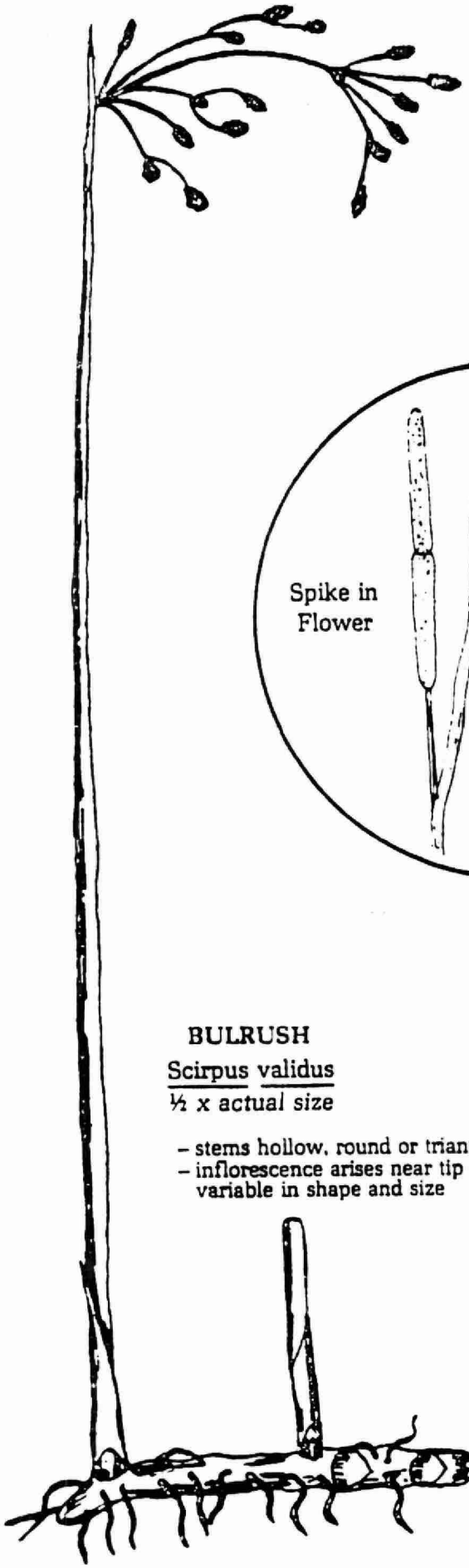




YELLOW WATER LILY OR SPATTERDOCK
Nuphar sp.
½ x actual size

- leaf oblong
- flower yellow

EMERGENT AQUATIC PLANTS

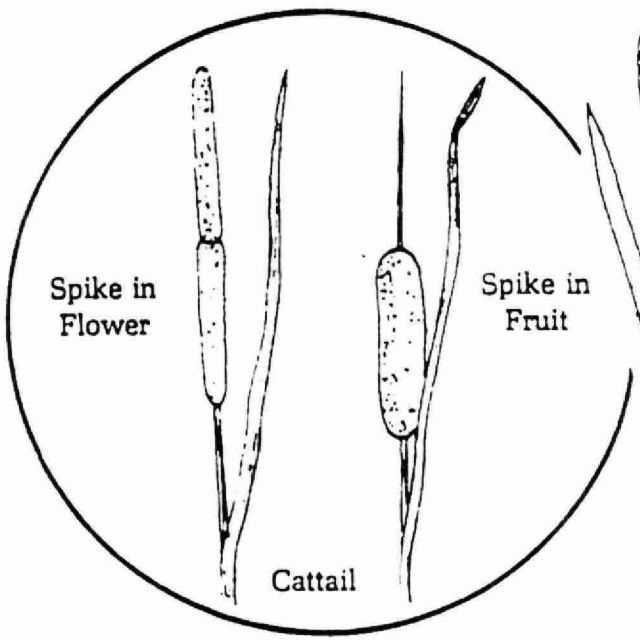


BULRUSH

Scirpus validus

½ x actual size

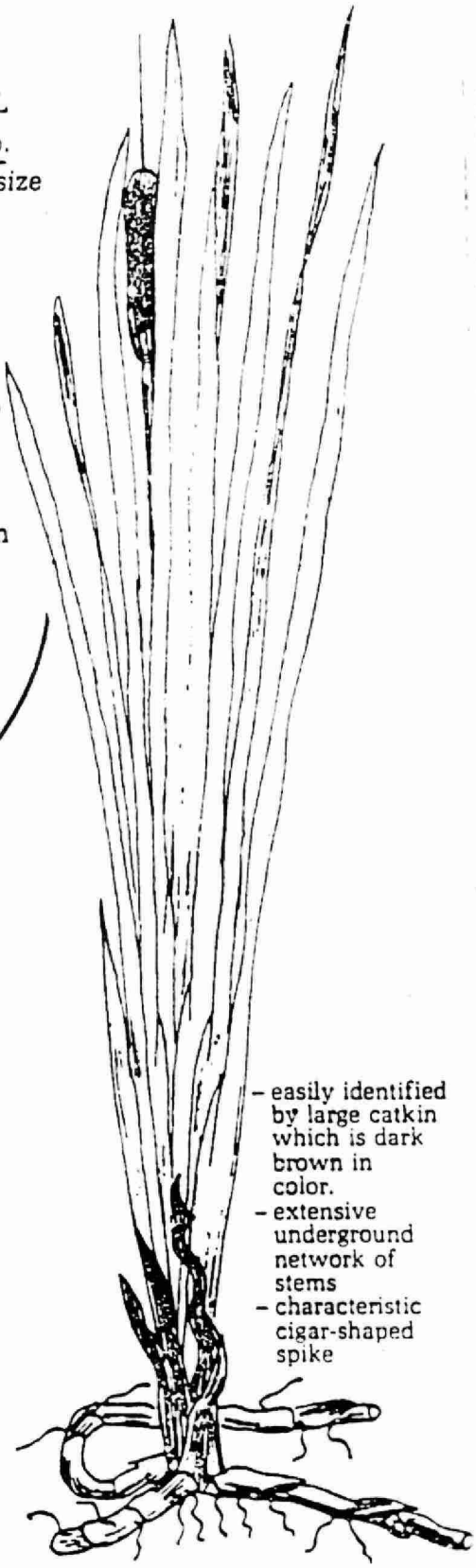
- stems hollow, round or triangular
- inflorescence arises near tip of stem, variable in shape and size



CATTAIL

Typha sp.

⅓ x actual size



- easily identified by large catkin which is dark brown in color.
- extensive underground network of stems
- characteristic cigar-shaped spike

APPENDIX I

ONTARIO MINISTRY OF THE ENVIRONMENT
PESTICIDES CONTROL OFFICES

COUNTY	DISTRICT OFFICE ADDRESS	TELEPHONE
Essex, Kent, Lambton	P.O. Box 726, 435 Grand Ave.W. Chatham, Ontario N7M 5L1	519-354-2150
Elgin, Middlesex, Oxford	985 Adelaide St.S. London, Ontario N6E 1V3	519-661-2200
Haldimand, Norfolk, Niagara, Hamilton, Wentworth, Dufferin, Wellington, Waterloo Brant	Ontario Government Building 119 King St. W. Hamilton, Ontario L8N 3Z9	416-521-7640
Bruce, Grey, Huron, Perth	Ont. Min. of Agr. & Food Bldg. 20 King St., Box 688 Clinton, Ontario N0M 1L0	519-482-3428
Halton, Peel, York, Durham, Toronto, Simcoe, Muskoka	7 Overlea Blvd., 4th floor Toronto, Ontario M4H 1A8	416-424-3000
Peterborough, Victoria, Haliburton, Northumberland	139 George St. N. Peterborough, Ontario K9J 3G6	705-743-2972
Frontenac, Hastings, Lennox & Addington, Prince Edward, Leeds & Grenville	133 Dalton Ave., Box 820 Kingston, Ontario K7L 4X6	613-549-4000
Prescott & Russell, Renfrew, Stormont, Dundas & Glengarry, Ottawa-Carleton, Lanark	2435 Holly Lane, Ottawa, Ontario K1V 7P2	613-521-3450
Manitoulin, Nipissing, Parry Sound, Sudbury Cochrane, Timiskaming, Algoma	199 Larch Street Sudbury, Ontario P3E 5P9	705-675-4501
Kenora, Rainy River, Thunder Bay	Ontario Government Building 435 James St. S. Thunder Bay, "F", Ontario P7C 5G6	807-475-1215
Head Office	Pesticides Section Hazardous Contaminants Coordination Branch 135 St. Clair Ave. W. Suite 100 Toronto, Ontario M4V 1P5	416-323-5095

APPENDIX II

ONTARIO MINISTRY OF NATURAL RESOURCES
DISTRICT OFFICES

DISTRICT	DISTRICT OFFICE ADDRESS	TELEPHONE
	Central Region	
Cambridge District	Box 2186, Cambridge, Ontario N3C 2W1	416-658-9355
Huronia District	Midhurst, Ontario L0L 1X0	705-728-2900
Lindsay District	322 Kent Street West Lindsay, Ontario K9V 4T7	705-324-6121
Maple District	10401 Dufferin Street Maple, Ontario L0J 1E0	416-832-2761
Niagara District	Box 1070, Fonthill, Ontario L0S 1E0	416-892-2656
	Southwestern Region	
Aylmer District	353 Talbot Street West Aylmer, Ontario N5H 2S8	519-773-9241
Chatham District	Box 1168, 435 Grand Avenue W. Kent County Municipal Building Chatham, Ontario, N7M 5L8	519-354-7340
Owen Sound District	611-9th Avenue East Owen Sound, Ontario N4K 3E4	519-376-3860
Simcoe District	P.O. Box 706, Hwy. 3 548 Queensway West Simcoe, Ontario, N3Y 4T2	519-426-7650
Wingham District	R.R. #5, Wingham, Ontario N0G 2W0	519-357-3131

APPENDIX II (continued)

ONTARIO MINISTRY OF NATURAL RESOURCES
DISTRICT OFFICES

DISTRICT	DISTRICT OFFICE ADDRESS	TELEPHONE
	Algonquin Region	
Algonquin Park District	Box 219 Whitney, Ontario, K0J 2M0	613-637-2780
Bancroft District	Box 500, Hwy. 28 Bancroft, Ontario, K0L 1C0	613-332-3940
Bracebridge District	Box 1138, Bracebridge, Ontario P0B 1C0	705-645-8747
Minden District	Minden, Ontario K0M 2K0	705-286-1521
Parry Sound District	7 Bay Street Parry Sound, Ontario P2A 1S4	705-746-4201
Pembroke District	Box 220, Riverside Drive Pembroke, Ontario, K8A 6X4	613-732-3661
	Eastern Region	
Brockville District	Box 605, Oxford Avenue Brockville, Ontario K6V 5Y8	613-342-8524
Carleton Place District	10 Findlay Avenue Carleton Place, Ontario K7C 3Z6	613-257-5735
Cornwall District	Box 1749, 113 Amelia Street Cornwall, Ontario K6H 5V7	613-933-1774
Napanee District	1 Richmond Boulevard Napanee, Ontario, K7R 3S3	613-354-2173
Tweed District	Box 70, 23 Spring Street Tweed, Ontario, K0K 3J0	613-478-2330

APPENDIX II (continued)

ONTARIO MINISTRY OF NATURAL RESOURCES
DISTRICT OFFICES

DISTRICT	DISTRICT OFFICE ADDRESS	TELEPHONE
	Northeastern Region	
Blind River District	Box 190, 62 Queen Street Blind River, Ontario P0R 1B0	705-356-2234
Espanola District	Box 1340, 148 Fleming Street Espanola, Ontario, P0P 1C0	705-869-1330
North Bay District	Box 3070, R.R. #3, Hwy. 63 North Bay, Ontario, P1B 8K7	705-474-5550
Sault Ste. Marie District	875 Queen Street E. Sault Ste. Marie, Ontario P6A 5L5	705-949-1231
Sudbury District	Box 3500, Station 'A' Sudbury, Ontario, P3A 4S2	705-522-7823
Temagami District	Box 38, Lakeshore Drive Temagami, Ontario, P0H 2H0	705-569-3622
Wawa District	Box 1160, 22 Mission Road Wawa, Ontario, P0S 1K0	705-856-2396
	North Central Region	
Atikokan District	108 Saturn Avenue Atikokan, Ontario, P0T 1C0	807-597-6971
Geraldton District	Box 640, 208 Beamish Avenue W. Geraldton, Ontario P0T 1M0	807-854-1030
Nipigon District	Box 970, Hwy. 17 Nipigon, Ontario, P0T 2J0	807-887-2120
Terrace Bay District	Box 280, Terrace Bay, Ontario P0T 2W0	807-825-3205
Thunder Bay District	Box 5000, 435 James Street S. Thunder Bay, Ontario P7C 5G6	807-475-1471

APPENDIX II (continued)

ONTARIO MINISTRY OF NATURAL RESOURCES
DISTRICT OFFICES

DISTRICT	DISTRICT OFFICE ADDRESS	TELEPHONE
	Northern Region	
Chapleau District	190 Cherry Street Chapleau, Ontario, P0M 1R0	705-864-1710
Cochrane District	Box 730, 2 Third Avenue Cochrane, Ontario, P0L 1C0	705-272-4365
Gogama District	Box 129, Low Avenue Gogama, Ontario, P0M 1W0	705-894-2000
Hearst District	Box 670, 631 Front Street Hearst, Ontario, P0L 1N0	705-362-4346
Kapuskasing District	6 Government Road Kapuskasing, Ontario P5N 2W4	705-335-6191
Kirkland Lake District	Box 129, Swastika, Ontario P0K 1T0	705-642-322[illegible]
Moosonee District	Box 190, Moosonee, Ontario P0L 1Y0	705-336-29[illegible]
Timmins District	896 Riverside Drive Timmins, Ontario, P4N 3W2	705-267-7[illegible]51
	Northwestern Region	
Dryden District	Box 730, 479 Government Road Dryden, Ontario, P8N 2Z4	807-223-[illegible]341
Fort Frances District	922 Scott Street Fort Frances, Ontario P9A 1J4	807-274-5337
Ignace District	Box 448, Ignace, Ontario P0T 1T0	807-9[illegible]-2233
Kenora District	Box 5080, 808 Robertson St. Kenora, Ontario, P9N 3X9	807-4[illegible]8-9841
Red Lake District	Box 5003, Red Lake, Ontario P0V 2M0	807-[illegible]27-2253
Sioux Lookout District	Box 309, Prince Street Sioux Lookout, Ontario P0V 2T0	807-737-1140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